



PIARC Global Road Safety Knowledge Exchange Infrastructure

Summary

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- **Recommendations**

About PIARC



PIARC

World Road Association

- Founded in **1909** as a non-profit, non-political Association
- Foster and facilitate global discussion and **knowledge sharing on roads and road transport**
- **124 government members** worldwide
- Retains **consultative status** to the Economic and Social Council of the **United Nations**
- **4 Strategic themes**: ST1 road administration, ST2 mobility, ST3 safety and sustainability, ST4 resilient infrastructure
- **16 Technical Committees (TCs)**, 4 per strategic theme, unite experts from numerous areas including road safety and design, network operations and maintenance, finance and governance.



PIARC Road Safety Technical Committee

Technical Committee T.C. 3.1: Road Safety part of ST3:

- Observes specific **road safety issues for LMICs**
- Explores the implementation of **proven countermeasures**
- Updates the “**Road Safety Audit Guidelines**” and the “**Road Safety Manual**”
- Disseminates and encourages the **application of the manuals**
- Provides **access to well-chosen safety measures** and their dissemination among **LMICs**
- Studies the implications of **connected and automated vehicles**

PIARC Road Safety Activities

- **Technical reports** prepared by the Technical Committees
 - Well-Prepared Projects
 - Automated Vehicles – Challenges and Opportunities for Road Operators and Road Authorities
- **Road Safety Manual:** an electronic manual for all technicians and managers concerned about road safety issues **acknowledged by the United Nations**
- **Seminars** organised by the Association available online
 - Connected and Autonomous Vehicles, a Pathway towards a Safer Future, 27-28 October 2021
 - Road Safety in Low to Middle Income Countries, 18-20 May 2021
- Declaration of **Support** to the **UN Decade of Action**

PIARC Global Road Safety Knowledge Exchange Project

- Aiming to **promote knowledge sharing** through appropriate implementation aids that will reflect previous work of but not limited to PIARC
- Focus on spreading road safety knowledge to **Low- and Middle-Income Countries**, where **death rates** due to road traffic injuries in LMICs are **three times higher** than in high-income countries (HIC).
- With the support of National Technical University of Athens (**NTUA**) and Austrian Institute of Technology (**AIT**)
- Deliverables for this project include **fact sheets, presentations**. Based on the road safety manual and other relevant **material produced by PIARC** technical committees (reports, case studies etc.).

Infrastructure Safety Fundamentals



Infrastructure Safety Fundamentals

- 88% of pedestrian travel is on 1- or 2- star roads
- 86% of bicyclist travel is on 1- or 2- star roads
- 67% of motorcyclist travel is on 1- or 2- star roads



Infrastructure Issues



Barriers

Current **barriers to effective infrastructure treatments** include:

- **Cost**
- Issues with **compliance**
- **Design** issues
- **Implementation** issues
- **Public acceptance**
- **Maintenance**



Design, Implementation and Maintenance Issues

- **Monitoring, analysis and evaluation** of the network are usually **omitted**, although required to ensure expected outcomes are met.
- Assessment of the **safety performance and impact of changes** is often **overlooked**.
- In most countries and cities, **more than half of all road deaths and severe injuries** happen on **less than 10% of the road length**



Compliance Issues

- **Lower level of compliance** with road rules and a lesser respect for the rule of law in most **LMICs** than for many HICs.
- **Compliance of treatments by road users** is a significant issue in LMICs, and it is very likely that the treatment effectiveness will be lower as a result. Issues that suffer from lack of compliance are :
 - **Roundabouts** (resulting from failure to give way, and even vehicles circulating in the wrong direction)
 - **Pedestrian crossings** (failure of traffic to give way)
 - **Pedestrian footpaths** (obstruction and misuse by vehicles (including motorcycles))
 - **Signalised intersections** (failing to stop)
 - **Shoulder sealing** (misuse as an extra lane, parked vehicles, roadside trading)
 - **Off-road cycle/motorcycle paths** (obstructions on paths, misuse by inappropriate vehicles).

Safety Issues

- Road infrastructure is often **the single most significant factor** that contributes to the **severity outcome of a crash**.
- **Head-on crashes** occur on **undivided roads** while the lack of a footpath or a safe crossing presents a major risk for death and injury to pedestrians.
- For **cyclists and motorcyclists**, the lack of specific infrastructure features that ensure a safe journey like **cycle lanes and motorcycle lanes** leaves them vulnerable to impact and injury.



Infrastructure Safety Measures



UN Decade of Action for Road Safety



Safe System Approach

- **UN Second Decade of Action for Road Safety**, with a goal of reducing road traffic deaths and injuries by at least 50 per cent from 2021 to 2030
- Adoption of Safe System Approach is necessary to prevent fatal and serious crashes.
- Focus upon **improvements** in infrastructure and vehicle safety **over the medium to longer term** will be essential in providing a forgiving system
- Road infrastructure must be planned, designed, built and operated to enable multimodal mobility, including shared/public transport, and walking and cycling.
- For those just starting to address safety, **corridor demonstration projects are a very effective way to improve safety.**

Safe System Principles



**Death/Serious Injury
is Unacceptable**



**Humans
Make Mistakes**



**Humans Are
Vulnerable**



**Responsibility
is Shared**



**Safety is
Proactive**



**Redundancy
is Crucial**

Safer Roads

Avoiding crashes involves:

- **Separating users in space**
- **Separating users in time**
- **Increasing attentiveness and awareness**

Managing crash kinetic energy involves:

- **Manage speed**
- **Manage mass difference**
- **Manage crash angles**



Infrastructure safety management

- **Clear and defined policies** relating to the delivery of Safe System Infrastructure are required to drive road safety improvements.
- **Standards, guidelines and tools** are a mechanism to translate policy into action.
- Care should be taken when **borrowing policy from other countries** to ensure that it is fit for local conditions.
- The priority for LMICs should be to **shift from Humanways to AssistedWays** as many roads as possible, starting with the main highways and corridors. This action would imply road infrastructure improvements related to: lane markings, pavements (distress, irregularities), visibility of vertical signs etc, leading to safer roads for both human-driven and automated vehicles.

Risk Assessment

- Assessment of risk should be undertaken for the **entire road network**.
- Although there are established approaches for identifying high risk crash locations, **training of key staff** is required.
- For existing road networks, where data is available, **assessment of crash data** should be undertaken to identify high risk locations.
- **Proactive approaches** should be adopted
 - Impact assessment
 - Road safety audit
 - Safety inspection
 - Road assessment programs



Infrastructure for Automation

- Currently, only **high-capacity highways, motorways, freeways** have the features necessary for applying a **Smart Roads Classification**
- When building **new roads**, road designers should aim to **achieve the highest Smart Road Levels**
- Activities should be directed towards **implementing and expanding the 5G coverage**, at least along their main corridors
- **LMIC** governments and transport industry **should be prepared** to avoid being caught off guard and to not get left behind the global community



Recommendations



Infrastructure Safety Recommendations (1/2)

- Develop **functional classifications** and desired safety performance standards for each road user group at the geographic land-use and road corridor level.
- **Review** and **update legislation** and **local design standards** that consider road function and the needs of all road users, and for specific zones.
- Specify a **technical standard** and star rating target for all designs linked to each road user, and the desired safety performance standard at that location.
- Implement **infrastructure treatments** that ensure logical and intuitive compliance with the desired speed environment (e.g. 30 km/h urban centres; \leq 80 km/h undivided rural roads; 100 km/h expressways).

Infrastructure Safety Recommendations (2/2)

- Undertake **road safety audits** on all sections of new roads (pre-feasibility through to detailed design) and complete assessments using independent and accredited experts to ensure a minimum standard of **three stars or better** for all road users, based on the iRAP star rating.
- **iRAP** provides an affordable solution for RSA and RSI and is recommended especially for **LMICs**,
- Undertake **crash-risk mapping** (where crash data are reliable) and proactive safety assessments and inspections on the target network with a focus on relevant road user needs as appropriate.
- Set a **performance target** for each road user based on the inspection results with clear measurable metrics at the road-attribute level (e.g. sidewalk provision).



PIARC IS BOOSTING ROAD SAFETY IN LMICs

- **Infrastructure** is a **key priority for increasing road safety**.
- PIARC Road Safety Technical Committee provides **up-to-date recommendations** on the planning, design, implementation, operation and maintenance of road infrastructure according to the Safe System Approach to all Road Authorities and Stakeholders.
- PIARC is engaged in **promoting road safety** all over the world and committed to **actively support safety in LMICs**.
- The new knowledge-sharing campaign for road safety will provide **monthly updates**, on social media and on PIARC website, for **all essential road safety areas**.
- **Stay tuned for more actions and events!!**



Relevant PIARC reports

- [Road Safety Manual. Planning, Design & Operation. Roles, Responsibilities, Policy Development and Programmes](#)
- [Road Safety Manual. Planning, Design & Operation. Designing for Road Users](#)
- [Road Safety Manual. Planning, Design & Operation. Infrastructure Management](#)
- [Road Safety Manual. Planning, Design & Operation. Risks and issue identification](#)
- [Road Safety Manual. Planning, Design & Operation. Intervention Selection](#)
- [Proceedings of the “International Seminar and Workshop on Safer Roads by Infrastructure Design and Operation”](#)
- [Documents Relevant to Road Infrastructure and Transport Security A PIARC Literature Review](#)
- [Proceedings of the Internal Workshop “Policies and Programs for Road Safety Management”](#)
- [1st Webinar on COVID-19 and Road Safety](#)
- [2nd Webinar on COVID-19 and Road Safety](#)
- [Proceedings of the World Road Congress 2019](#)
- [Overweight Vehicles: Impact on Road Infrastructure and Safety](#)
- [Automated Vehicles – Challenges and Opportunities for Road Operators and Road Authorities](#)
- [Well-prepared projects. A PIARC collection of case studies](#)



Relevant PIARC reports

- [Addressing Road Safety Worldwide: Vulnerable Road Users, Human Factors & RS in LMIC](#)
- [Impact of new propulsion technologies on road tunnel operations and safety](#)
- [Smart Roads Classification](#)
- [Human Factors Guidelines for a Safer Man-Road Interface](#)
- [State of the art in road design standards. A PIARC literature review](#)
- [Improving Resilience of Road Networks – Case Studies](#)
- [Improving Road Tunnel Resilience Considering Safety and Availability](#)

Thank you for your attention!



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